

CLAIMS

1. A system for the electrical regulation
5 of a device for transmission of power between, on one
side, the thermal engine (1) and a pair of electrical
machines (4a, 4b) equipping an automobile vehicle, and
on the other, its drive wheels (2), the thermal engine
(1) being connected to the two electrical machines (4a,
10 4b) by means of a mechanical assembly (3), whereas an
electrical connecting device (6, 60a; 61a-60b; 61b, 5a-
5b, 50a-50b) situated between the two electrical
machines provides a direct passage for power from one
machine to the other, without a significant
15 intermediate energy storage or recovery element, this
connecting device (6, 60a; 61a-60b; 61b, 5a-5b, 50a-
50b) being controlled such that the power generated by
one of the two electrical machines (4a; 4b) is
immediately consumed by the other (4b; 4a), and in
20 order that the two electrical machines (4a, 4b) respond
to the requirements of the drive train, the connection
providing the transfer of electrical power between the
two electrical machines and achieving this by means of
two inverters (5a, 5b), each one being associated with
25 one electrical machine (4a, 4b), these two inverters
being connected to a bus (6) whose two lines are
connected via a capacitor (62), characterized in that,
on the one hand, it is designed to ensure that the
voltage (V) across the terminals of the capacitor be
30 continuously maintained at a given setpoint value
(V_{ref}), called 'voltage setpoint value', and on the
other, that it is capable of acting on the torque of
each of the two electrical machines, either separately
or simultaneously, and in any case continuously, in
35 response to the error signal resulting from the
comparison of the measured value of this voltage with
respect to said setpoint value (V_{ref}).

2. The system for electrical regulation of a power transmission device as claimed in claim 1, characterized in that a value Σ , called 'electrical setpoint value', is produced by a corrector device (85) from the error in the voltage value of the capacitor (62) with respect to the setpoint value.

3. The system for electrical regulation of a power transmission device as claimed in claim 2, characterized in that the sum $Ca.\omega a + Cb.\omega b$ remains continuously equal, or substantially equal, to said value referred to as 'electrical setpoint value' Σ , Ca and Cb being the values of the torques respectively delivered by each of the two electrical machines (4a, 4b), whereas ωa and ωb are the regime values (rotation speeds) of each of these machines.

4. The system for electrical regulation of a power transmission device as claimed in one of claims 1 to 3, characterized in that it disposes of one free input corresponding to a value M , referred to as 'mechanical setpoint value', that is defined for the transmission.

5. The system for electrical regulation of a power transmission device as claimed in claim 4, characterized in that the regulation is performed by resolving either a system of two equations with two unknowns Ca and Cb , Ca and Cb being the torque values respectively delivered by each of the two electrical machines (4a, 4b), when these machines are not in torque limit; or a system comprising one equation and one inequality with two unknowns Ca and Cb in the other situations, so as to continuously ensure that the sum $Ca.\omega a + Cb.\omega b$ remains continuously equal, or substantially equal, to a given value Σ , called 'electrical setpoint value', and that the value of the controlled mechanical quantity is as close as possible to said mechanical setpoint value M .

6. The system for electrical regulation of

a power transmission device as claimed in one of claims 1 to 4, characterized in that the transfer of power between the two electrical machines (4a, 4b) is reversible